

HL7 EHR System Functional Model and Standard



Presented by:

R. Lenel James

Senior Project Manager

Blue Cross and Blue Shield Association

Co-lead HL7 EHR WG Conformance Team

Member HL7 PHR WG

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Agenda

- **Current Status**
- **Overview of EHR System (EHR-S) Functional Model**
- **Walk through of EHR-S FM**
- **Conformance Clause and Profiles**
- **Distinction between Standards and Product Certification**
- **Next Steps**

EHR vs. EHR-S

● EHR

- The underlying single, logical patient record
- The data elements comprising the record
- Needs to serve as the legal record

● EHR-S

- Software that provides functionality to:
 - Manage and maintain the record
 - Accomplish the various clinical, research, and business purposes of the record
- Monolithic system or a system of systems

PHR - EHR: What Are the Differences?

- **EHR**

- Legal record
- Episodic first, could be longitudinal
- Administrative, financial, clinical data

- **PHR**

- Not a legal record
- Could be cradle to grave
- Data that is pertinent: How much clinical data to store?

How It Started - Request from US Govt

- **April / May, 2003: CMS asked**
 - **IOM for guidance on care delivery functions**
 - **IOM & HL7 to coordinate development of a functional model for an EHR *system*, not a transaction**
 - **Needed for pay for performance**
- **IOM Committee on Data Standards for Pt. Safety**
 - **June, 2003: Began work on care delivery functions**
 - **July 31, 2003: Issued Letter Report**

From DSTU to Full ANSI Accreditation

- **Approved July 2004 as a draft standard for trial use (DSTU)**
 - **2 year period to continuously improve DSTU, become an ANSI accredited standard**
 - **Core, not perfect or exhaustive, functionality**
 - **Good enough for industry to begin using as a standard**
- **Approved February 2007 as a fully ANSI accredited standard**

The EHR-S Functional Model

Is Not...

- A messaging specification
- An EHR specification
- An implementation specification (not the “how”)
 - Does not prescribe technology
 - Does not dictate how functions must be implemented (e.g., via the user interface, database design)

Is...

- A system specification
- An EHR system specification
- A reference list of functions that may be present in an EHR-S (the “what”)
 - Enables consistent expression of functionality
 - Provides flexibility for innovation and product differentiation
 - Gold standard, sensitive to what can practically be done by a system, future system development

EHR-S Functional Model at a Glance

Direct Care	C1.0	Care Management
	C2.0	Clinical Decision Support
	C3.0	Operations Management and Communication
Supportive	S1.0	Clinical Support
	S2.0	Measurement, Analysis, Research, Reporting
	S3.0	Administrative and Financial
Information Infrastructure	I 1.0	EHR Security
	I 2.0	EHR Information and Records Management
	I 3.0	Unique identity, registry, and directory services
	I 4.0	Support for Health Informatics & Terminology Standards
	I 5.0	Interoperability
	I 6.0	Manage business rules
	I 7.0	Workflow

Functions describe the behavior of a system in user-oriented language so as to be recognizable to the key stakeholders of an EHR System

EHR-S Functional Model & Standard

- **Function names & statements provide a reference list of functions that:**
 - May be present in an EHR-S
 - Understandable from a user's perspective
 - Enables consistent expression of functionality
- **Conformance criteria**
 - Required criteria: Mandatory
 - Optional criteria: Two levels

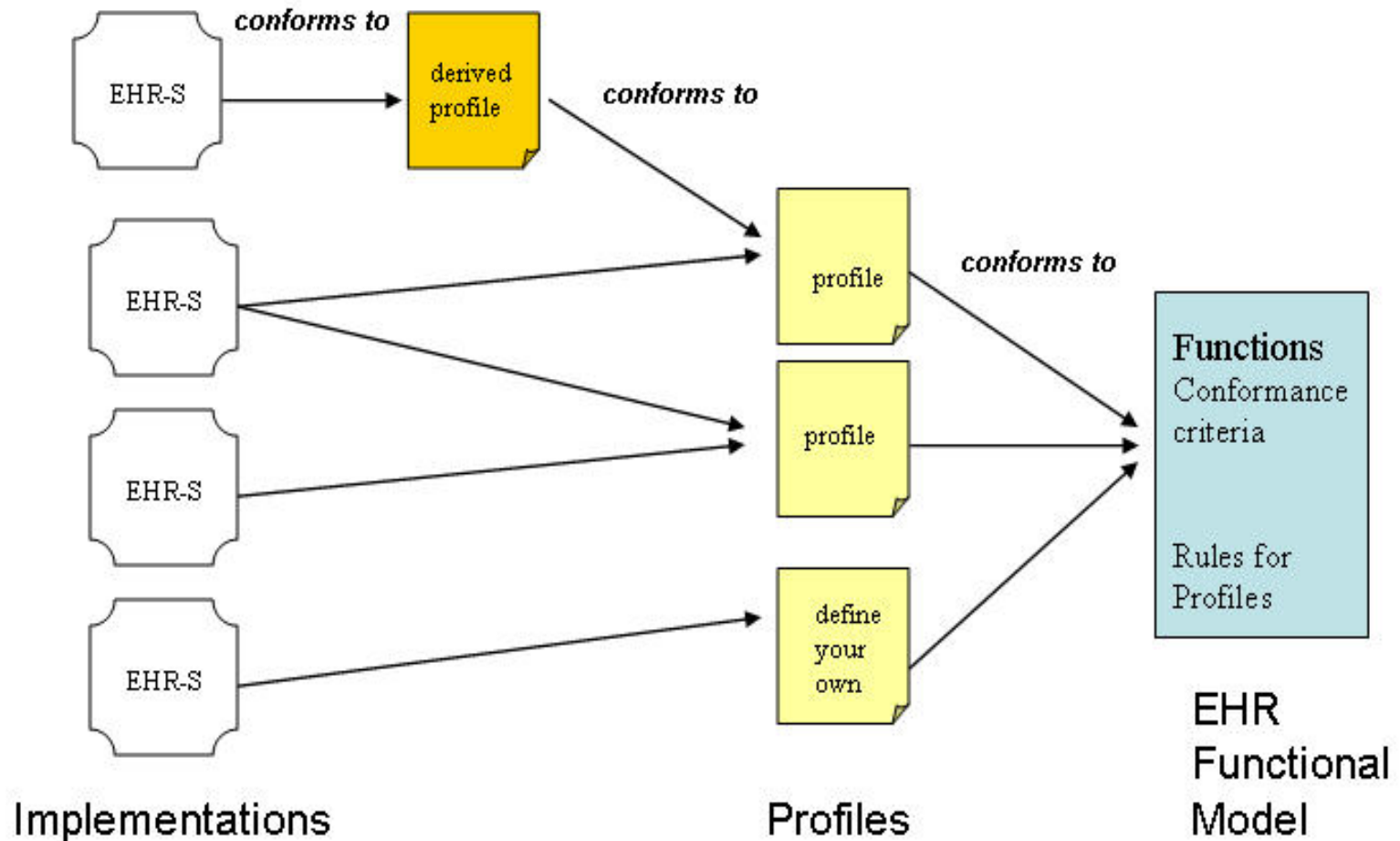
The Structure of the Functional Model

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria
DC.1.1.1	F	Identify and Maintain a Patient Record	<p>Statement: Identify and maintain a single patient record for each patient.</p> <p>Description: A single record is needed for legal purposes, as well as to organize it unambiguously for the provider. Health information is captured and linked to the patient record. Static data elements as well as data elements that will change over time are maintained. The patient is uniquely identified, after which the record is tied to that patient. Combining information on the same patient, or separating information where it was inadvertently captured for the wrong patient, helps maintain health information for a single patient. In the process of creating a patient record, it is at times advantageous to replicate identical information across multiple records, so that such data does not have to be re-entered. For example, when a parent registers children as new patients, the address, guarantor, and insurance data may be propagated in the children's records without having to re-enter them.</p>	S.1.4.1 S.2.2.1 S.3.1.2 S.3.1.5 IN.2.1 IN.2.3	1.The system SHALL create a single logical record for each patient.
					1.The system SHALL provide the ability to create a record for a patient when the identity of the patient is unknown.
					1.The system SHALL provide the ability to store more than one identifier for each patient record.
					1.The system SHALL associate key identifier information (e.g., system ID, medical record number) with each patient record.
					1.The system SHALL provide the ability to uniquely identify a patient and tie the record to a single patient.
					1.The system SHALL provide the ability, through a controlled method, to merge or link dispersed information for an individual patient upon recognizing the identity of the patient.
					1.IF health information has been mistakenly associated with a patient, THEN the system SHALL provide the ability to mark the information as erroneous in the record of the patient in which it was mistakenly associated and represent that information as erroneous in all outputs containing that information.
					1.IF health information has been mistakenly associated with a patient, THEN the system SHALL provide the ability to associate it with the correct patient.
1.The system SHALL provide the ability to retrieve parts of a patient record using a primary identifier, secondary identifiers, or other information which are not identifiers, but could be used to help identify the patient.					

Profiles Can Be Derived from the FM

	Inpatient	Outpatient	Home	
			Medication Admin Record	
	Medication Administration Record		Lifestyle	
	Bed management	Wellness Reminders	Wellness Reminders	
	Drug-Drug Interaction	Drug-Drug Interaction	Drug-Drug Interaction	
	Notes	Notes	Notes	Notes
	Results Reporting	Results Reporting	Results Reporting	
	Order Management	Order Management	Order Management	
	Event Capture	Event Capture	Event Capture	Event Capture
	Security	Security	Security	Security
	Demographic Management	Demographic Management		
	Record Management	Record Management	Record Management	

Conformance to Profiles



Profiles Developed/Under Development

- **Emergency Department***
- **Child Health***
- **Long Term Care***
- **Behavioral Health***
- **Records Management & Evidentiary Support****
- **Regulated Clinical Research (Clinical Trials)**
- **Vital Statistics Reporting**

* Submitted to CCHIT, part of expansion area

** To be submitted to CCHIT

Differs between Standards & Certification

- **Gold standard vs. specific purpose incentives**
 - Wide spread EHR adoption
 - Pay for performance
- **Standards development organization (SDO) vs. public/private collaborative**
- **Avoid perceived conflict of interest (where a single organization both develops the standard and certifies against it)**
- **Product certification references standards**

HL7 & CCHIT Working Together

HL7 EHR-S Standard				CCHIT Product Certification			
Function ID	Function	Conformance Criteria		Certification Criteria	Certification Year		
		No.	Clause		2008	2009	2010
1.0	1.1 ABC						
		1	...SHALL.....	...SHALL.....	X		
		2	...SHOULD.....	...SHALL.....		X	
		3	...SHALL.....	...SHALL.....	X		
		4	...MAY.....	...(Did not adopt)			
		5	...SHOULD.....	...SHALL.....		X	
		6	...SHALL.....	...SHALL.....			X

- **Granularity: Individual conformance criterion may be certified in a year different from other criteria in the same function**
- **Dependent on essential now vs. future, market availability, & priority for improving quality of care**

Next Steps

- **Looking for other profiles to be developed**
- **Realm (country)-based profiles**
- **Map Functional Model to HL7 messages and documents**
- **Personal Health Record, Interoperability derivative models**

Want to Know More?

- **Join HL7, review the HL7 web site**
- **Subscribe to HL7 EHR TC List server (HL7 members)**
- **Attend open public sessions (no HL7 membership required)**

www.hl7.org/ehr

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Q & A

